made of the number of viable spores of the blight fungus which were retained by each trap. Traps were set at six different locations at West Chester, Pa., and analyses have been made after each rain period for the months of January to April, inclusive.

There were seven rain periods in January with precipitation varying from 0.13 to 0.88 inch. The number of viable pycnospores obtained from each trap varied from 55,000 to 61,255,000 for each analysis. During February there were four rain periods with precipitation varying from 0.07 to 0.78 inch. After each rain the number of viable pycnospores obtained from each trap varied from a few thousand to 92,000,000. Similar results have been obtained for the months of March and April.

The cotton for the traps was transported to the laboratory in sterile Petri dishes and the number of viable spores determined by the poured plate method, using 3 per cent. dextrose agar, plus 10.

One of the noteworthy facts is that ascospores do not appear to be washed down the tree during the winter rains, although they are present in abundance in the pustules. That all the colonies appearing in the poured plates made from the cotton traps came from pycnospores was demonstrated in two different ways: first, by their time of appearance; second, by the absence of ascospores in the centrifuged sediment as determined by microscopic examination.

The effectiveness of the cotton traps in retaining the spores washed down has also been determined by cultures. In many cases only about two per cent. of the spores passing into the cotton was retained. This being true, the figures given above are but a meager expression of the enormous numbers of pycnospores produced. Considering the fact that we have also demonstrated that pycnospores can be subjected to freezing temperatures for considerable periods without losing their vitality, they must play a very important part in the dissemination of the blight fungus.

The forcible expulsion of the ascospores of the blight fungus has been reported by Rankin[2] and Anderson[3] and the influence of moisture upon this phenomenon has been demonstrated by both writers. They have not, however, taken temperature conditions into account. The expulsion of ascospores depends not only upon the presence of sufficient moisture, but also upon the temperature to which the lesion has been subjected. The influence of temperature upon the expulsion of ascospores has been determined during the past winter by means of laboratory and field tests. Laboratory tests have shown that bark bearing perithecial pustules, if subjected to low temperatures (42 to 46° F.) for a period would not begin the expulsion of ascospores until exposed to favorable temperatures for three or four days, even though supplied with an abundance of moisture. The minimum temperatures at which spore expulsion takes place vary from 52 to 60° F.

On November 26, 1912, a large number of ascospore traps (49) were placed upon lesions of the blight fungus in a badly diseased coppice growth at West Chester, Pa. These have been under continuous observation since that time and accurate rainfall and temperature records kept at that station. There was practically no expulsion of ascospores until March 21, although there had been many rain periods (21) with precipitation varying from 0.01 to 1.64 inch. The above records show that ascospores were not washed down from the lesions during any of the winter rains and that there was practically no expulsion of ascospores during the period from November 26 to March 21.

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A STRIKING CORRELATION IN THE PEACH

THE importance of correlations in the characters of plants from the standpoint of either research or practise is so well known as to

[2] Rankin, W. H., Report Penna. Chestnut Blight Conference, p. 46, 1912. *Phytopathology*, 3: 73, 1913.

[3] Anderson, P. J., *Phytopathology*, 3: 68, 1913.

need no setting forth. The search for them is one of the imperatives with those who experiment or those who cultivate plants and once begun becomes fascinating—indeed irresistible. The seeker is so seldom rewarded —correlations are not common phenomena—that haste may be pardoned in publishing a discovery.

This spring a most striking correlation in the peach, which seems not to have been noted before, came to the attention of the writer. In the work of describing the flowers of a considerable number of varieties of peaches, Mr. Charles Tubergen, of the horticultural department of this station, found that there was a somewhat remarkable difference in the color of the inside of the calyx cups of different varieties. In some of the blossoms the color of the inner surface of the cup was green, usually a light green but varying somewhat in different varieties. In other varieties the cellular tissue of the inner part of the cup was a deep orange in color—not the surface alone but the tissue to the depth of several layers of cells was orange. In no other part of the calyx, the blossom, or the plant, in the spring of the year, does there appear to be a similar color.

Upon investigation it was found that the flowers having the green cup were those of the white-fleshed varieties while the blossoms with the orange cup were those of the yellow-fleshed ones. We were able to observe the character in two trees each of 307 varieties of peaches and of 47 varieties of nectarines. Of the peaches 145 varieties were white in flesh and green inside the calyx-cup; 162 were yellow in flesh and orange inside the calyx-cup. In the nectarines white and green were correlated in 36 and yellow and orange in 11 varieties.

In neither peach nor nectarine are there intermediates in color of calyx-cup or in flesh of fruit. The parentage of a sufficient number of the varieties examined is known to make it certain that green calyx-cup with white flesh and orange calyx-cup with yellow flesh are each inherited as one in cross-breds.

What is the explanation of this hidden connection between colors in two organs of the peach which are not only quite distinct but which appear on the plant in periods as widely separated as blooming-time and fruiting-time? The correlations are so constant and their hereditary behavior is such as to suggest that each is a single color character diffused through the flesh of the peach fruit and the inner tissue of the calyx cup. Surely the two organs in which the correlation appears are morphologic units but the capacity to produce the same color, differing probably only in degree in the parts in which it is found, and at widely different times, must be conceived to be a physiologic unit. If so, why localized in these two organs and not generalized throughout similar tissue in other parts of the plant as correlated colors generally are?

This correlation has some practical value in peach-breeding, since it will often enable the breeder to tell a year or two sooner than he otherwise could what color of flesh his peach will have since the first blossoms seldom set fruit; it is of material value in classifying peaches—adding another very constant taxonomic character; through its uses for the breeder and the systematist it becomes ultimately of considerable value to peach-growers. Lastly, it seems to the writer to have value in throwing light on current conceptions of morphologic and physiologic units in plants and also presents a problem to be explained as to why there is a localization of a particular color in two quite distinct organs.

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MICHIGAN ACADEMY OF SCIENCE

The Michigan Academy of Science held its nineteenth annual meeting at Ann Arbor on April 2, 3 and 4.

The following is the program as given at the meeting. The numbers marked with a star will be published in the Fifteenth Annual Report of the Michigan Academy of Science.